Mumbai University

Question Paper

May - 2018

[B.Sc.IT – Semester: VI]
(IDOL – Revised Course)

- ❖ **INTERNET TECHNOLOGIES**
- ❖ **DIGITAL SIGNALS AND SYSTEMS**
- ❖ **DATA WAREHOUSING**
- ❖ **PROJECT MANAGEMENT**

KAMAL THAKUR

Mumbai University

Question Paper

[IDOL – Revised Course]
(May – 2018)

Paper - I

Internet Technologies

Time: 3 Hours   **Total Marks:** 100

N.B.: **(1)** *All Question are Compulsory.*
    (2) *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
    (3) *Answer To The Same Question Must Be Written Together.*
    (4) *Number To The Right Indicates Marks.*
    (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
    (6) *Use of Non – Programmable Calculator is allowed.*

Q.1   **ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

(A)   Explain input module of TCP.   **(5)**
(B)   Write a note on various links available in OSPF.   **(5)**
(C)   Explain IPv6 base header format.   **(5)**
(D)   Draw and explain DHCP packet format.   **(5)**

Q.2   **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

(A)   Write a note on NAT (network address translation)   **(5)**
(B)   Explain role of transport layer.   **(5)**
(C)   Explain subnetting with example.   **(5)**
(D)   State and explain Fragmentation module of IP Package.   **(5)**
(E)   Explain strategies for transmission from IPv4 to IPv6.   **(5)**
(F)   Write a note on Classless addressing.   **(5)**

Q.3   **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

(A)   Draw and explain packet format of ARP.   **(5)**
(B)   Draw and explain general format of ICMP messages.   **(5)**
(C)   Write a note on Inefficiency in Mobile IP.   **(5)**
(D)   Explain BGP messages.   **(5)**
(E)   Explain two-node instability in RIP.   **(5)**
(F)   Explain various types of LSA in OSPF.   **(5)**

Q.4   **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

(A)   State and explain services of UDP.   **(5)**
(B)   Write and Explain pseudo code of input module of UDP.   **(5)**
(C)   Explain byte number, sequence number, acknowledgment number used in TCP.   **(5)**
(D)   Explain Half close in TCP.   **(5)**
(E)   Explain Association establishment of SCTP.   **(5)**
(F)   Explain SACK chunk of SCTP.   **(5)**

Q.5   **ATTEMPT ANY THREE QUESTIONS: (15 MARKS)**

(A)   Draw and explain DHCP client transition diagram.   **(5)**
(B)   Explain recursive and iterative resolution in DNS.   **(5)**
(C)   Explain the concept of NVT and NVT character set.   **(5)**
(D)   Explain in brief components of SSH.   **(5)**
(E)   Explain in brief communication over control connection & data connection in FTP.   **(5)**
(F)   Explain RRQ and WRQ messages of TFTP.   **(5)**

Q.6   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)   Explain in detail static, dynamic and active web documents.   **(5)**

(B)   Explain persistence and nonpersistent connection of HTTP.   **(5)**

(C)   Write a note on user agent of email system.   **(5)**

(D)   Explain in detail the role of POP3 and IMAP4 in email system.   **(5)**

(E)   Explain three approaches of stream stored audio/video.   **(5)**

(F)   Draw and explain RTP Packet format.   **(5)**

Q.7   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)   Explain in detail constructors used to create DatagramPacket.   **(5)**

(B)   Write TCP socket program that will give factorial of a number.   **(5)**

(C)   Explain ServerSocket class with its methods and properties.   **(5)**

(D)   Explain how UDP socket programming works?   **(5)**

(E)   Write UDP socket program that will display whether a string is palindrome or not.   **(5)**

(F)   Write a Client/server application where a client contacts the server to obtain random number. Use Socket and Server Socket.   **(5)**

Mumbai University

[IDOL – Revised Course]
(May – 2018)

PAPER - II

Digital Signals

and Systems

Time: 3 Hours   **Total Marks:** 100

N.B.: **(1)** *All Question are Compulsory.*
  (2) *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
  (3) *Answer To The Same Question Must Be Written Together.*
  (4) *Number To The Right Indicates Marks.*
  (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
  (6) *Use of Non – Programmable Calculator is allowed.*

Q.1   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   Show whether the following systems are linear and time varying: **(5)**
  (i) $y(n) = nx(n)$
  (ii) $y(n) = nx2(n)$

(B)   Define the following: **(5)**
  (i)   *Energy signals and Power Signals*
  (ii) *Aperiodic and Periodic Signals.*

(C)   Write the advantages of digital signal processing over analog signal processing?   **(5)**

(D)   Deduce Fourier series for waveform of positive going rectangular pulse train.   **(5)**

Q.2   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)   What is sampling theorem? State the sampling theorem?   **(5)**
(B)   Determine the Z-transform of the given sequence $x(n) = nanu(n)$.   **(5)**
(C)   Determine the pole–zero plot for the system described by difference equation $y(n) - 3/4y(n -$ **(5)**
  $1) + 1/8y(n - 2) = x(n) - x(n - 1)$.
(D)   Write a short note on Poles and zeros of a system function?   **(5)**
(E)   Explain how analog signals get converted into digital signals.   **(5)**
(F)   Define digital signal processing and write the advantages of digital signal processing? **(5)**

Q.3   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)   State and prove Parseval's Theorem or Rayleigh's Energy Theorem.   **(5)**
(B)   Obtain the Laplace transform of the unit step and impulse response of R-C circuit   **(5)**
(C)   Discuss final value theorem in Laplace transfers domain.   **(5)**
(D)   Derive from the principals, the Laplace transforms of a unit step function.   **(5)**
(E)   Find the Laplace Transform of the $t \, sin \, at$.   **(5)**
(F)   Define Region of Convergence of Laplace transforms? Write its significance?   **(5)**

Q.4   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)   Define z transform and inverse Z-transform briefly?   **(5)**
(B)   Determine the convolution of the two sequences $x(n) = \{2,1,0,0,5\} \, and \, h(n) = \{2,2,1,1\}$. **(5)**
(C)   Derive the relationship between the Fourier transform and Z-transform.   **(5)**
(D)   State and discuss the five properties of region of convergence.   **(5)**
(E)   State the Partial fraction Expansion Method to calculate inverse Z-transform. Find the inverse Z **(5)**
  transform of $X(z) = z/(z - 3)(z - 4)$.
(F)   Evaluate frequency response of system described the system function $H(z) = 1/1 - 0.5z - 1$. **(5)**

Q.5   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A) Show that the system function described by the differential equation $dy(t)/dt + 10y(t) + 5 = x(t)$ **(5)**
is nonlinear.

(B) Determine DFT of sequence whose values for one period is given by $x(n) = \{1,1,-2,-2\}$.   **(5)**

(C) What are the properties of Frequency response in case of z-transform?   **(5)**

(D) Define the property of superposition in case of linear systems.   **(5)**

(E) Obtain circular convolution of following sequences $x(n) = \{1,2,1\}$ and $h(n) = \{1,-2,2\}$.   **(5)**

(F) How will you obtain linear convolution from circular convolution?   **(5)**

Q.6   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A) State and explain any four properties of DFT.   **(5)**

(B) Determine DFT of sequence whose values for one period is given by $x(n) = \{1,1,-2,-2\}$.   **(5)**

(C) Distinguish between linear convolution and circular convolution of two sequences?   **(5)**

(D) State the relationship between DFT and z-Transform.   **(5)**

(E) Obtain circular convolution of following sequences $x(n) = \{1,2,1\}$ and $h(n) = \{1,-2,2\}$.   **(5)**

(F) Define Discrete Fourier Transform (DFT) for a sequence $x(n)$.   **(5)**

Q.7   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A) Write a short note on Elliptic filters.   **(5)**

(B) Obtain the system function for normalized Butterworth filter for order $N = 1$ and $N = 2$.   **(5)**

(C) Determine the unit sample response of the ideal low pass filter .Why is it not realizable?   **(5)**

(D) State the advantages of Digital filters.   **(5)**

(E) Write a short note on Chebyshev Filters.   **(5)**

(F) Discuss and derive the frequency response of the linear phase FIR filters.   **(5)**

Mumbai University

[IDOL – Revised Course]
(May – 2018)

Paper - III

Data

Warehousing

Time: 3 Hours   **Total Marks:** 100

N.B.: (1) *All Question are Compulsory.*
     (2) *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
     (3) *Answer To The Same Question Must Be Written Together.*
     (4) *Number To The Right Indicates Marks.*
     (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
     (6) *Use of Non – Programmable Calculator is allowed.*

Q.1 ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)	Write a short note on database management system.	**(5)**
(B)	How transaction processing can be parallelized?	**(5)**
(C)	Write a short note on ETL mapping.	**(5)**
(D)	Write a short note on building the metadata infrastructure.	**(5)**

Q.2 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)	Write a short note on star schema.	**(5)**
(B)	Write a short note on interactive sector.	**(5)**
(C)	Explain data warehouse with respect to referential integrity.	**(5)**
(D)	Write a short note on meta data.	**(5)**
(E)	Differentiate between structured and unstructured data.	**(5)**
(F)	Write a short note on lifecycle of Data Warehouse.	**(5)**

Q.3 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)	Differentiate between active and passive repositories.	**(5)**
(B)	Briefly explain internal and external taxonomy.	**(5)**
(C)	Explain spiral model methodology in brief.	**(5)**
(D)	What is statistical processing with respect to data warehousing?	**(5)**
(E)	Define data marts and exploration facility.	**(5)**
(F)	What is project based data?	**(5)**

Q.4 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)	Explain in brief ETL data quality monitor.	**(5)**
(B)	What is a granular data?	**(5)**
(C)	Explain the importance of encryption process.	**(5)**
(D)	How data access can be protected in DW?	**(5)**
(E)	Explain in brief how to monitor DW environment.	**(5)**
(F)	Write a short note on attack sensing.	**(5)**

Q.5 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)	Briefly explain discrete data.	**(5)**
(B)	Explain audit trail with respect to ETL.	**(5)**
(C)	Write a short note on time variant data.	**(5)**
(D)	Define role of ETL in brief.	**(5)**
(E)	Explain exception flow of data.	**(5)**
(F)	Explain ETL in batch mode.	**(5)**

TURN OVER

Q.6 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A) Write a short note on homegrown versus third party granularity manager. **(5)**
(B) Define analytical response time. **(5)**
(C) How transactions can be separated into classes? **(5)**
(D) Write a short note on creating enterprise metadata. **(5)**
(E) What are service level agreements? Explain in brief. **(5)**
(F) Write a short note on data partitioning. **(5)**

Q.7 ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A) Explain in brief physical design process. **(5)**
(B) Explain process of DW implementation. **(5)**
(C) Explain data warehouse deployment. **(5)**
(D) Define DW maintenance. **(5)**
(E) Write a short note on data warehouse. **(5)**
(F) Write a short note on growth of DW. **(5)**

Mumbai University

Question Paper

[IDOL – Revised Course]
(May – 2018)

Paper - IV

Elective

Project

Management

MUMBAI UNIVERSITY

QUESTION PAPER

PROJECT MANAGEMENT

(MAY – 2018 | **IDOL** – REVISED COURSE**)**

B.Sc.IT

(SEMESTER – VI)

Time: 3 Hours

Total Marks: 100

N.B.: **(1)** *Question No. 1 is compulsory.*
    (2) *Attempt any four from Question 2 to 7.*
    (3) *Answer To The Same Question Must Be Written Together.*
    (4) *Number To The Right Indicates Marks.*
    (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
    (6) *Use of Non – Programmable Calculator is allowed.*

Q.1 **ATTEMPT THE FOLLOWING QUESTIONS: (20 MARKS)**
(A) Describe Software Economics and its generations in detail. **(5)**
(B) What is Waterfall model? Explain in detail. **(5)**
(C) What is Reducing Software Product Size? Explain Reuse and Commercial Components. **(5)**
(D) Describe about Improving Team Effectiveness. **(5)**

Q.2 **ATTEMPT THE FOLLOWING QUESTIONS: (20 MARKS)**
(A) Explain Quality with respect to Improving Software Economics. **(6)**
(B) What are the principles of Modern Software Management? Explain in detail. **(8)**
(C) Explain Engineering and Production Stages in detail. **(6)**

Q.3 **ATTEMPT THE FOLLOWING QUESTIONS: (20 MARKS)**
(A) Describe Iteration Workflows in detail. **(8)**
(B) What is WBS and Evolutionary WBS? Explain in detail. **(6)**
(C) Describe Major and Minor milestones in detail. **(6)**

Q.4 **ATTEMPT THE FOLLOWING QUESTIONS: (20 MARKS)**
(A) Explain Project Organizations in detail. **(8)**
(B) Explain any five tools in Automation Building Blocks. **(6)**
(C) Explain Software Change Order. **(6)**

Q.5 **ATTEMPT THE FOLLOWING QUESTIONS: (20 MARKS)**
(A) Explain Management Indicators in detail. **(6)**
(B) Explain Metrics Automation in detail. **(8)**
(C) Explain Scaling in Process Discriminants. **(6)**

Q.6 **ATTEMPT THE FOLLOWING QUESTIONS: (20 MARKS)**
(A) Describe top 10 Software Management Principles. **(8)**
(B) Describe about Software Management Best Practices. **(6)**
(C) Please mention about Culture shifts. **(6)**

Q.7 **ATTEMPT THE FOLLOWING QUESTIONS: (20 MARKS)**
(A) Write a note on Modern Software Economics. **(8)**
(B) Describe some of the performances about Modern Software Management Framework. **(6)**
(C) Describe about Teamwork among Stakeholders. **(6)**